NASA Procedural Requirements

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Chapter 4. Mission Management Aircraft Flight Operations

4.1 Purpose

4.1.1 This chapter establishes policies and procedures for management, use, operation, and control of Government aircraft when used or controlled by NASA to transport passengers or cargo. The definition of passengers does not include crewmembers or qualified non-crewmembers who are directly associated with the conduct or purpose of the flight. For example, researchers conducting or observing their experiments aboard the DC-8 are qualified non-crewmembers. A media representative aboard a Space Shuttle training aircraft observing NASA's flight operations for public affairs purposes would also be a qualified non-crewmember. NASA aircraft are defined herein as aircraft owned, leased, chartered, or rented by NASA, in accordance with NPD 7900.4, Aircraft Operations Management, and OMB Circular A-126, Improving the Management and Use of Government Aircraft. MMA flight operations are defined as the use of NASA aircraft to transport passengers or cargo.

4.2 Policy

4.2.1 In compliance with OMB Circular A-126, NASA will not own aircraft exceeding the number, size, and capacity necessary to meet documented mission requirements. NASA aircraft are public aircraft as defined by 49 U.S.C. S 40102 (37), but are operated as civil aircraft when carrying passengers. NASA aircraft are prohibited from carrying passengers when operating as public aircraft. When operated as civil aircraft, maintenance and aircrew standards shall meet the requirements for retention of FAA airworthiness certification and operation. [123] Those requirements must be followed for any NASA mission management flight that carries passengers. The Certificate of Airworthiness shall be displayed per FAR 91.203 (a) and (b). [124] Mission management flights shall be operated and maintained in accordance with FAR parts 21, 39, 43, 61, and 91 subparts A and B. [125] Centers shall develop policies/procedures to operate MMA in accordance with the procedures specified in OMB Circular A-126 and 41 C.F.R., chapter 101-36.4, as well as the provisions of this chapter. [126] Procedures of the International Civil Aviation Organization (ICAO) apply, in lieu of FAR part 91, on international flights.

4.2.2 Mission management flights shall be conducted only in support of activities that constitute the discharge of NASA's official responsibilities and only when the aircraft is not otherwise scheduled for "Mission Required" or "Required Use" flight operations. [127] NASA employees shall not use mission management flights if commercial airlines, charter aircraft service, or ground transportation are reasonably available to meet the mission need, unless the flight is cost justified in accordance with OMB Circular A-126 and this chapter. [128] Mission management flights may be conducted for the transportation of authorized personnel on official Government business in accordance with OMB Circular A-126. Such travel may be approved only after following all requirements of this chapter.

4.2.3 Flights that require excessive deadheading or involve long, unproductive layovers shall be avoided, absent special emergency situations. [129] Whenever practicable, inter-Center airlift requirements shall be combined. [130]

4.2.4 Each passenger traveling aboard NASA mission management flights must be a U.S. Government employee or contractor on official U.S. Government business and have either an approved NASA travel authorization in accordance with NASA directives or a travel authoriza-tion approved by another Federal agency or Congressional committee. Travel authorized by another Federal agency or Congressional committee also shall be approved by an Official-in-Charge of a Headquarters Office or a NASA Center Director. [131] Flight crewmembers on mission management flights may be considered as passengers for cost justification purposes when they have either an approved NASA travel authorization in accordance with NASA directives or a travel authorization approved by another Federal agency or Congressional committee for purposes or activities beyond their crew flight duties. The names of the passengers and purpose of travel for such passengers shall be documented in the mission management flight request form. [132] Per 41 C.F.R., part 300-3.1, contractors working under a contract with an executive agency are considered Federal travelers and may travel on a Government aircraft.

4.2.4.1 In special emergency situations that are approved by the Assistant Administrator for the Office of Infrastructure and Administration or at the Center Director level, other persons may be permitted to travel aboard NASA mission management flights for emergency or humanitarian purposes or on a "space available" and cost-reimbursable basis. Reimbursement by nonofficial travelers must comply with section 4.7 of this chapter.

4.2.5 All passengers shall be manifested on NASA Form 1269, Flight Itinerary and Passenger Manifest. [133] Prior to departure of any mission management flight, the PIC shall certify the accuracy of the manifest and file a copy with a responsible ground agency such as a military, civil, or NASA operations office. [134] The PIC is relieved of the requirement to provide the manifest if a NASA official has been designated as the ground coordinator for the flight with responsibility for maintaining the manifest.

4.2.6 NASA mission management flight operations shall be conducted under the cognizance of the Assistant Administrator for the Office of Infrastructure and Administration. [135]

4.2.7 The Assistant Administrator for the Office of Infrastructure and Administration shall designate NASA MMA. [136]

4.3 Classification of MMA Use

4.3.1 Required Use. Mission management flights may be classified as Required Use only if the use of Government aircraft is required because of bona fide communications or security needs or exceptional scheduling requirements. Required Use designation shall be controlled solely by the NASA Administrator and approved according to section 4.4.2 of this chapter. [137]

4.3.2 Mission Required. Mission management flights may be classified as Mission Required only when failure to use a NASA MMA would have a clear, negative impact on a NASA operational mission, prevent timely response to an aircraft or spacecraft accident, or threaten the health and safety of NASA personnel, and only when such travel could not be conducted using commercial airlines, charter aircraft service, or ground transportation to fulfill that mission need. All passenger travel that can reasonably be performed using commercial airlines, charter aircraft service or ground transportation to meet the mission need may not be designated as Mission Required. Classification of a mission management (passenger or cargo) flight as Mission Required requires approval from the Assistant Administrator for the Office of Infrastructure and Administration before the flight and shall be coordinated with the HQ AMD. [138] Refer to section 4.4 of this chapter for approval procedures. Mission management flights also may be designated as Mission Required for nontravel activities that support NASA's official responsibilities. Such activities include, but are not limited to, training, evacuation (including medical evacuation), search and rescue, aeronautical research, space and science applications, and other such non-travel activities as cited in OMB Circular A-126. Mission Required use may not include official travel to give speeches, attend conferences or meetings, or make routine site visits. Cost justification in accordance with OMB Circular A-126 is not required for Mission Required flights.

4.3.2.1 Flights can only be designated as Mission Required if such travel cannot be conducted using commercial airlines, charter aircraft service, or ground transportation to fulfill that mission need. Examples of Mission Required MMA flights include, but are not limited, to the following:

International Space Station Program

a. Return International Space Station crews after landing.

b. Provide transportation for emergency response to in-space operations problems and unexpected events.

Space Shuttle Program

c. Provide emergency transportation capability for KSC shuttle launch/landing rapid response team for each shuttle launch.

d. Provide transportation capability for initial response to space vehicle post-mishap investigations.

e. Needed for emergency response to in-space operations and unexpected events. (unscheduled and time-critical events)

f. Provide transportation of the dependent families of the astronaut crewmembers to and from launches and landings.

g. Provide transportation for prime flight crewmembers to/from launch site during pre-launch countdown and post-launch activities.

Science Programs

h. r aircraft grounded off station due to maintenance problems.

i. Return hardware and data from the landing site of remotely operated space probes.

j. Transport equipment to support flight research for unscheduled and time-critical events to accommodate tight launch schedules.

k. Provide contingency, fast-response capability for launch and search and recovery operations for sounding rockets launched from the Wallops range.

Natural Disaster Response

l. Hurricane and other natural disaster evacuation and response to protect NASA personnel and property.

Table 4-1 Mission Requirements

4.3.3 NASA mission management flights that are not classified as Required Use or Mission Required are classified as Other Official Travel. Agency official travel will normally be accomplished using commercial airlines or available means of ground transportation. Travel on mission management flights that are designated as Other Official Travel must be authorized in advance on a trip-by-trip basis as detailed in section 4.4. NASA employees shall not use mission management flights for Other Official Travel if commercial airline, charter aircraft service, or ground transportation is reasonably available, unless the flight is cost justified in accordance with OMB Circular A-126 and this chapter. [139]

4.3.4 Examples of Other Official Travel include, but are not limited to, the following:

a. Travel to give speeches.

b. Travel to accept awards.

c. Travel to make routine site visits.

d. Travel to attend NASA-sponsored meetings, including meetings for Flight Readiness Reviews, Launch Minus-2, Launch Minus-1, launch or landing activities, launches of other NASA-related payloads, launch recovery operations, Soyuz launch and recovery operations, NASA advisory committees, councils and board meetings, professional conferences, or contractor conferences.

4.3.5 Other Official Travel that is not Required Use or Mission Required, as defined in 4.3.3 above, shall be authorized only when either:

4.3.5.1 No commercial airline or aircraft (including charter) service is reasonably available (i.e., able to meet the traveler's departure or arrival requirements within a 24-hour period), unless extraordinary circumstances require a shorter period to effectively fulfill Agency requirements. (When using "no commercial airline or aircraft service is reasonably available" to justify the use of mission management flights, actual airline schedule information shall be provided as part of, and attached to, the aircraft request.) [140] OR

4.3.5.2 The actual cost of using a Government aircraft is not more than the cost of using commercial airline or aircraft (including charter service). [141] Such cost justification shall be computed consistent with section 4.4.5.2 of this chapter. [142]

4.3.6 Mission Required or Required Use flights (certified under the terms of section 4.4) may transport passengers on Other Official Travel when space is available and such travel is approved in strict compliance with this chapter. Under these circumstances, such mission management flight use may be presumed to result in cost savings to the U.S. Government, and a cost justification is not required and should not be completed on NASA Form 1653 for the flight.

4.3.7 Use of PS or R&D aircraft for passenger transportation purposes, regardless of travel classification category, shall follow the same requirements as used for all other mission management flights, including compliance with 41 C.F.R. 101-37 and OMB Circular A-126, flight request and approval using NASA Form 1653, cost justification on NASA Form 1653 as required, and obtaining travel authorization approvals. [143] When operated as civil aircraft, maintenance and aircrew standards shall meet those required for retention of FAA airworthiness certification and operation and shall be followed for any NASA mission management flight that carries passengers. [144] The Certificate of Airworthiness shall be displayed per FAR 91.203 (a) and (b). [145] Centers shall exercise caution to ensure that aircraft are returned to their FAA-certificated configuration after being modified for Program Support or Research purposes. [146] Refer to section 4.9 of this chapter for specific policies and procedures for flying passengers on Research or Program Support aircraft.

4.3.8 Nonofficial travel on NASA mission management flights is the use of remaining aircraft seating capacity for nonofficial purposes on a flight that is scheduled for official Government business. Nonofficial travel on NASA mission management flights shall be authorized only when all the following conditions are met:

a. The aircraft is already scheduled for use for an official purpose.

b. Such nonofficial travel use does not require a larger aircraft than needed or alteration of flight itinerary for the official purpose.

c. Nonofficial travel use results only in minor additional cost to the Government. [147]

4.3.8.1 All nonofficial travelers shall reimburse the U.S. Treasury in accordance with section 4.7. [148]

4.3.9 The Center Director shall certify, in writing, that nonofficial travel on a scheduled flight has met the above conditions. [149] The Center shall retain this certification for a minimum of two years. [150] In an emergency situation, prior verbal approval by the Center Director with an after-the-fact written certification is permitted.

4.4 Approval of Flights

4.4.1 All flights with passengers aboard NASA aircraft assigned to a Center shall be reviewed by the Center Chief Counsel for compliance with 41 C.F.R., part 101-37 and OMB Circular A 126, and approved in advance by the Center Director. [151] In the case of aircraft assigned to HQ, those flights shall be reviewed by the General Counsel or Deputy General Counsel and approved in advance by the Assistant Administrator for the Office of Infrastructure and Administration. [152] Additionally, all flights classified as Other Official Travel that have Senior Federal Officials aboard shall be reviewed by the General Counsel or the Principal Deputy General Counsel and approved in advance by the appropriate NASA HQ or Center approval authority. [153] This review and approval authority may not be delegated.

4.4.2 Mission management flights also shall be approved in advance, in writing, and generally on a trip-by-trip basis. [154] The Administrator shall in each instance determine the appropriateness of Required Use flights following a finding of compliance with OMB Circular A-126 requirements by the General Counsel or Principal Deputy General Counsel (Administration and Management). [155] While the Administrator may make a blanket determination that all use of NASA aircraft by certain employees, or travel in specified categories, qualifies as Required Use travel, such determinations shall likewise be in writing, be determined to be compliant with OMB Circular A-126 requirements by the General Counsel or Principal Deputy General Counsel (Administration and Management), and set forth the justification for that determination. [156]

4.4.2.1 The Center Director must complete the following when a member of the flightcrew is also considered a passenger:

a. The justification shall be annotated in the remarks section of NASA Form 1653. [157]

b. The flightcrew member shall have either a NASA travel authorization approved in accord-ance with NASA directives or a travel authorization approved by another Federal agency or Congressional committee for purposes or activities beyond their crew flight duties. [158]

c. The flightcrew member shall be listed as a passenger on Form 1653. [159]

d. If the flightcrew member is a Senior Federal Official, a family member of such Senior Federal Official, or a non-Federal traveler, the flight request shall be reviewed by the General Counsel or Principal Deputy General Counsel. [160]

4.4.3 Flights classified as Mission Required where NASA personnel are traveling to meet mission requirements also shall be reviewed by the General Counsel or Principal Deputy General Counsel (Administration and Management) and approved in advance by the Assistant Administrator for the Office of Infrastructure and Administration. [161] Refer to figure 4-1 for the approval process flow chart. The Assistant Administrator for the Office of Infrastructure and Administration shall ascertain prior to authorizing the flight that the purpose of the trip is for Mission Required travel as described in section 4.3.2. [162] Should special emergency situations preclude pre-flight review and approval, immediate action to review and approve the flight shall be taken as soon as practicable following the flight. [163]

4.4.3.1 Flights classified as Mission Required conducted on Research or Program Support aircraft, where passengers are aboard but the primary purpose of the flight is not passenger transport, may be approved at the Center Director level with Center Counsel review. General Counsel shall review the flight in advance if a Senior Federal Official, families of such Senior Federal Officials, or non-Federal travelers are passengers. [164] Refer to figure 4-2 for the approval process flow chart (figure 4-4, if a Senior Federal Official is a passenger). Cost justification is not required. Authorization shall be coordinated with the HQ AMD. [165] An example of such a flight would be a Program Support flight to provide photographic chase on a research object, or aircrew training to meet minimum proficiency standards. In this example, the primary purpose of the flight is not passenger transport. However, in addition to the crewmembers and qualified non-crewmembers directly involved with the flight's primary mission, support personnel or other official travelers may be carried as passengers providing that all other applicable provisions of this chapter have been met. An MMA Flight Request (NASA Form 1653) is required, and the passenger manifest (NASA Form 1269) shall clearly distinguish aircrew from passengers. [166] The remarks section of the NASA Form 1653 shall indicate what training and for whom the flight is being conducted. [167] NOTE: If minimum aircrew currency requirements have been met prior to the commencement of the flight for all of the aircrew assigned to a flight, aircrew training cannot be the primary purpose of a flight when carrying passengers.

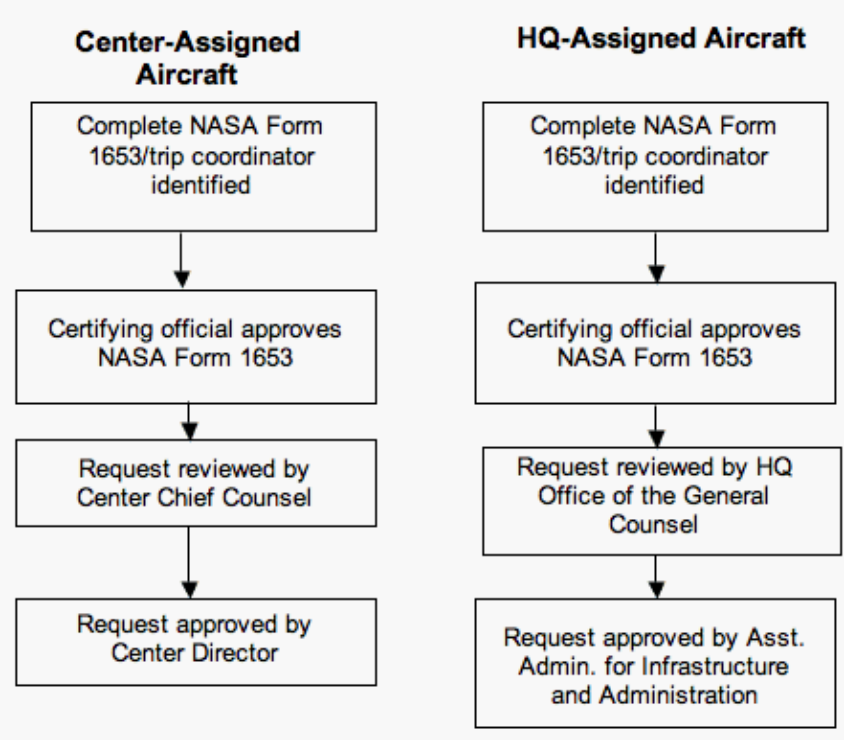

Figure 4-1 Mission Required Travel Where Passenger Transportation Is the Primary Purpose of the Flight

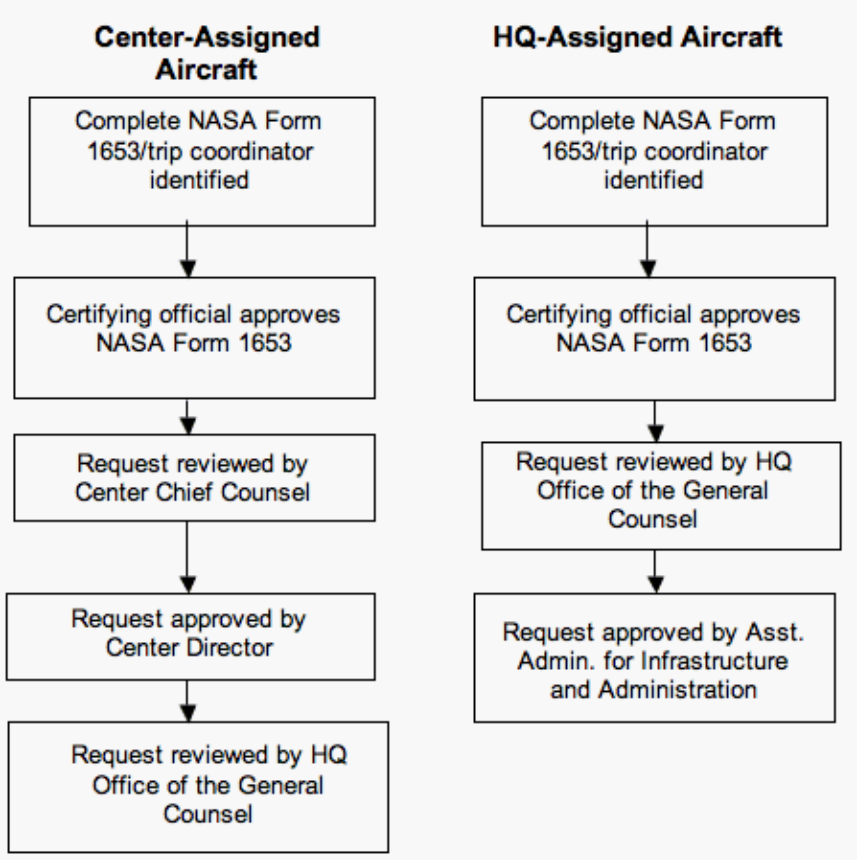

Figure 4-2 Mission Required Travel Where Passenger Transportation Is Not the Primary Purpose of the Flight

4.4.4 For the approval process for Other Official Travel, refer to figures 4-3 and 4-4. Travel by the following categories of people must be authorized in advance and in writing when traveling aboard mission management flights on Other Official Travel, and their status shall be annotated on the flight request and manifest:

a. Senior Federal Officials.

b. Members and families of such Senior Federal Officials.

c. Non-Federal travelers. [168]

4.4.4.1 Senior Federal Officials are persons who meet one of the following definitions:

a. Employed at a rate of pay specified in or fixed according to subchapter II, chapter 53 of Title 5 of the U.S. Code;

b. Employed in a position in an executive agency, including any independent agency, at a rate of pay for Level I of the executive schedule or employed in the Executive Office of the President (EOP) at a rate of pay for Level II of the executive schedule;

c. Employed in a position in an executive agency that is not referred to in clause (i) of Section 1009 of Title 37 of the U.S. Code (other than a position that is subject to pay adjustment under Section 1009 of Title 37 of the U.S. Code) and for which the basic rate of pay, exclusive of any locality-based pay adjustment under Section 5304 of Title 5 of the U.S. Code (or any comparable adjustment pursuant to interim authority of the President), is equal to or greater than the rate of basic pay for the senior executive service (SES) under Section 5382 of Title 5 of the U.S. Code;

d. Appointed by the President to a position under Section 105(a)(2)(A), (B), or (C) of Title 3 of the U.S. Code or by the Vice President to a position under Section 106(a) (1) (A), (B), or (C) of Title 3 of the U.S. Code; or

e. Civilian officials appointed by the President with the advice and consent of the Senate and civilian employees of the EOP including senior executive branch officials. Generally, these officials are persons employed by the White House and executive agencies, including independent agencies, at a rate of pay equal to or greater than the minimum rate of basic pay for the SES. Active duty military officers are exempted from this definition.

4.4.4.2 Authorizations for Other Official Travel flights with Senior Federal Officials, families of such Senior Federal Officials, and non-Federal travelers aboard shall be:

a. Reviewed in advance on a trip-by-trip basis by the Center Chief Counsel; [169]

b. Approved by the Center Director; [170]; and

c. Reviewed by the NASA General Counsel or Principal Deputy General Counsel (Administration and Management). [171]

4.4.4.3 At NASA HQ, all flights shall be reviewed by the General Counsel or Principal Deputy General Counsel (Administration and Management) and approved in advance by the Assistant Administrator for the Office of Infrastructure and Administration. [172] In special emergency situations, an after-the-fact written certification is permitted. Other Official Travel flights on Center-assigned aircraft with no Senior Federal Officials aboard shall be reviewed by the Center Chief Counsel and approved by the Center Director without HQ review. [173]

Figure 4-3 Approval Flow for Other Official Travel Without Senior Federal Officials, Families of Such Senior Federal Officials, or Non-Federal Travelers Aboard

Figure 4-4 Approval Flow for Other Official Travel With Senior Federal Officials, Families of Such Senior Federal Officials, or Non-Federal Travelers Aboard

4.4.5 When the mission management flight is for Other Official Travel, the approving official shall determine that one of the following criteria has been satisfied:

4.4.5.1 No commercial aircraft or airline service is reasonably available in accordance with paragraph 4.3.4.1.

4.4.5.2 The actual cost of mission management flights does not exceed the cost of using commercial airlines or aircraft (including charter service). For such "cost-justified flights," the cost of using commercial airline or aircraft services for justifying the use of Government aircraft shall:

a. Be the current Government contract fare or price or the lowest fare or price known to be available for the trip(s) in question.

b. Include any differences in the costs of any additional ground or air travel, per diem and miscellaneous travel (e.g., taxis, parking), and lost employee work time (computed at gross hourly costs to the Government, including benefits) between commercial air, charter air service, and Government aircraft. To capture the cost, including fringe benefits, of the employee's lost work time, a multiplier of 1.3285 must be applied to the locality-adjusted hourly salaries of the individual travelers for the additional travel time. The hourly salaries of the travelers are determined by dividing the applicable current average annual salaries that are provided by the NASA Workforce Web site by 2,087. Selecting the "Average Salaries by Occupation and Center (table)" view will provide access to the necessary data to determine average salaries by occupation and grade for each Center. While Federal salary data can be found at many other locations, the NASA Workforce Web site is the official NASA source. Travel time is defined as the time required to travel from the office or home until arrival at the business location or hotel, whichever is earliest. [174]

4.5 Responsibilities Associated with Mission Management Flight Operations

4.5.1 The Assistant Administrator for the Office of Infrastructure and Administration shall have the following responsibilities:

4.5.1.1 Approving policies and other matters involving NASA mission management flights (except those specifically outlined above) and ensuring that the number of NASA-owned aircraft and their capacity to carry passengers and cargo does not exceed the level necessary to meet NASA's mission requirements. [175]

4.5.1.2 Coordinating acquisition, assignment, or disposition of aircraft whose primary purpose is the conduct of mission management flights with the appropriate Associate Administrators and Center Directors in accordance with OMB Circular A-76. [176]

4.5.1.3 Annually reviewing mission management flight requirements, use, and associated costs, including variable cost rates for each aircraft used to conduct mission management flights. [177]

4.5.1.4 Periodically reviewing the need for all NASA aircraft whose primary purpose is mission management flight operations, and the cost effectiveness of NASA mission management flight operations in accordance with the requirements of OMB Circular A-76. Each such review of NASA-owned aircraft whose primary purpose is mission management flight operations shall be submitted to the General Services Administration (GSA) when completed and to Office of Management and Budget (OMB) with NASA's next budget submission. [178]

4.5.1.5 Ensuring that current (by fiscal year) variable cost rate for each aircraft utilized to conduct mission management flights is used by all NASA officials who operate and account for NASA mission management flights to calculate the flight-by-flight cost justification required by OMB Circular A-126. [179]

4.5.2 Center Directors are responsible for the safe and efficient operation of mission management flights conducted by their assigned aircraft. Specifically, Center Directors shall:

4.5.2.1 Ensure that aircraft are used properly and that the functions, including contract functions, performed by their aircraft comply, at a minimum, with NASA, FAA, OMB, and other Federal requirements, policies, and procedures.

[180] Center Directors may establish more restrictive local standards where circumstances warrant, following coordination with the Assistant Administrator for Infrastructure and Administration.

4.5.2.2 Ensure compliance with 41 C.F.R., part 101-37 and OMB Circular A-126. [181]

4.5.2.3 Approve the use of their assigned aircraft to conduct mission management flights where passenger transport is not the primary mission. [182]

4.5.2.4 Designate aircrew to conduct mission management flights and ensuring continuing compliance with all governing regulations. [183]

4.5.2.5 Establish variable cost rates for aircraft under their control that are, or may be, used for passenger transportation. The rate will be developed using OMB Circular A-126, attachments A and B, incorporating the most recent 12 months of historical cost data available and shall be used to determine the cost justification for MMA flight requests. The rate shall be reported to the HQ AMD not later than September 15 of each year and cannot be used until approved by that office. [184]

4.5.2.6 Annually review and document the Center's continuing need for aircraft whose primary purpose is the transport of passengers and the cost-effectiveness of such aircraft operations, as required by OMB Circular A-126 and reflected in the NASA Financial Management Requirements and guidance from the HQ AMD. Content of this review must include, in narrative format, a comparison of the past years' use with future requirements. Upon completion of the annual review, a copy shall be forwarded to the HQ AMD not later than October 31 of each year. [185] When Government ownership of an aircraft is no longer justified, Center Directors shall identify such aircraft to the Assistant Administrator for Infrastructure and Administration for reassignment or disposal. [186]

4.5.2.7 Submit a monthly report of mission management flight data to the HQ AMD to arrive not later than the 20th of the next month. [187] This data must include all available mission management flight and request records for NASA aircraft under the control of the Center Director and must reflect every flight flown by aircraft that has been, or may be, approved to transport passengers regardless of whether the passengers were aboard that flight. At a minimum, the following shall be provided:

a. NASA Form 1653, Mission Management Flight Request.

b. NASA Form 1269, Flight Itinerary and Manifest.

c. Cost Calculation Spreadsheet.

d. NASA Aircraft Management Information System (NAMIS) Form 1672, Aircraft Log. [188]

4.5.2.8 Certification documentation demonstrating compliance with paragraph 4.3.5 for any nonofficial travel use and documentation of the required reimbursement described in section 4.7 shall be included in the monthly mission management flight data submission. This responsibility may be delegated. [189]

4.5.3 The Director of the HQ AMD is responsible for the following:

4.5.3.1 Providing oversight, functional management, and direct staff support to the Administrator concerning Agency-wide policies, procedures, and guidelines for the management and conduct of mission management flights and Center compliance with NASA and OMB requirements.

4.5.3.2 Developing and coordinating plans for the acquisition, assignment, and disposition of NASA aircraft whose primary purpose is passenger transport.

4.5.3.3 Developing standard Agency-wide maintenance and operating requirements and policies, including minimum training and qualification requirements for aircrew and maintenance personnel.

4.5.3.4 Coordinating periodic meetings with Center Aircraft Operations Chiefs and Maintenance Chiefs to review and update Agency-wide operations and maintenance requirements, policies, and procedures.

4.5.3.5 In conjunction with the chairman, IAOP, coordinating and participating in the conduct of operational reviews to ensure the adequacy and standardization of procedures, aircrew training and qualification programs, and aircraft maintenance and inspection programs at Centers operating mission management flights.

4.5.3.6 Evaluating cost and utilization data for NASA aircraft used to conduct passenger transport.

4.5.3.7 Providing an annual summary analysis of all cost and utilization data for mission management flight operations to the Assistant Administrator for Infrastructure and Administration.

4.5.3.8 Providing Centers with guidance and assistance in the development of aircraft variable cost rates for use in accomplishing cost comparisons.

4.5.3.9 Reviewing and approving Center-derived variable cost rates for MMA.

4.5.3.10 Maintaining a centralized database of mission management flight operations documentation to monitor

usage, aircraft costs, and compliance with NASA and OMB requirements.

4.5.3.11 Providing an annual report to the Assistant Administrator for Infrastructure and Administration on the quality of Agency-wide compliance with NASA and OMB requirements for mission management flight operations no later than November 15 of each year.

4.5.3.12 Conducting annual audits of Center mission management flight operations documentation.

4.5.4 The Inter-Center Aircraft Operations Panel

4.5.4.1 The IAOP performs Agency-wide coordination and communication to recommend requirements, policies, and operational improvements that can be used by the NASA Centers to improve local operations policies and procedures and by the HQ AMD to improve Agency policies, procedures, and guidelines.

4.5.4.2 For each aircraft type used to conduct mission management flights, the IAOP chairperson may establish operations and maintenance subpanels with responsibility for standardizing aircrew and maintenance procedures, establishing aircrew and maintenance training/qualification standards, and conducting airworthiness reviews. For subpanels, the IAOP chair will ensure the following.

a. Subpanel members shall be Chiefs of Aircraft Operations and Chiefs of Aircraft Maintenance or their designees, as well as a representative from the HQ AMD who shall act as permanent executive secretary. [190]

b. Subpanels shall be convened at least annually in formal meetings; however, the subpanels shall act as standing committees subject to call by the chairperson to review urgent business. Informal meetings may be conducted by teleconference. [191]

c. Subpanels, with IAOP chairperson concurrence, shall forward their recommendations through the HQ AMD to the Assistant Administrator for Infrastructure and Administration for final approval. Headquarters-approved recommendations shall be considered directive in nature and shall be reflected in NASA policy documents. [192]

4.5.5 Flightcrew members

4.5.5.1 Maintaining the highest standards of safety is the primary concern of all crewmembers. Other concerns, such as passenger service, courtesy, promptness, and reliability are important but must always be secondary to safety. All crewmembers shall comply with the provisions set forth in this NPR and with FAA and OEM publications for their aircraft and other applicable directives, regulations, and instructions. [193]

4.5.6 Pilot in Command. A fully qualified pilot shall be designated as PIC and charged with the responsibility of conducting each NASA mission management flight. [194]

4.5.6.1 The PIC is responsible for exercising complete authority, without limitation, over the command and supervision of assigned crewmembers during flight and crew duty time.

4.5.6.2 The PIC is solely responsible for accomplishing the mission assigned to the aircraft, for all facets of its operations, and for exercising final authority over the safety of the aircraft and its passengers. The PIC will make the decision to delay or divert a flight for operational reasons such as weather, aircraft conditions, or pilot fatigue. The PIC will not be overruled by other persons embarked. A decision by the PIC to delay or divert a flight for the above reasons or based on safety concerns will not be the basis for disciplinary action.

4.5.7 Second in Command (SIC). The pilot assigned to duty as SIC during flight must be qualified as either a PIC or SIC as specified in paragraph 4.11.4. It is the SIC's responsibility to assist the PIC and to be able to assume command in the event of the PIC's absence or incapacitation.

4.5.7.1 A SIC may, at the discretion of the PIC, fly from the left seat or right seat on missions (such as ferry or training missions) when no passengers are on board. A SIC will not make takeoffs or landings from either seat with passengers on board. However, Center Chiefs of Flight Operations may grant, in writing, authority for a PIC to allow a SIC to execute landings with passengers aboard. The final approval authority for such operations remains with the PIC for each flight.

4.6 Reporting Requirements

4.6.1 The HQ AMD will ensure strict compliance with the following reporting requirements:

4.6.1.1 NASA's aircraft programs must be included in NASA's Management Control Plan and will comply with the internal control requirements of OMB Circular A-123. Any material weaknesses found must be reported in the next annual internal control report to the President and Congress.

4.6.1.2 OMB Circular A-76 reviews will be completed when required and submitted to GSA and OMB with the Agency's next budget submission. These reports will include plans for disposition of any aircraft not justified in the review or identification of such additional aircraft as may be required.

4.6.1.3 On a semiannual basis, NASA reports to GSA each mission management flight for "Other Official Travel" by Senior Federal Officials, staff of the Executive Office of the President, members of the families of such officials, and any non-Federal travelers (except as authorized under 10 U.S.C. 4744 and regulations implementing that statute). Such reports will be in a format as specified by GSA and list all such travel conducted during the preceding six-month period. The report must include, at a minimum:

a. The name of each such traveler.

b. The official purpose of the trip.

c. Destination(s).

d. For travel in which it was stated that a mission management flight would be less expensive than a commercial carrier, the allocated share of the full operating cost of each trip and the corresponding commercial cost for the trip. (Reports on classified trips will not be reported to GSA but must be maintained by the agency using the mission management flights and must be available for review as authorized.)

4.6.1.4 Records of all mission management flight operations shall be retained for at least two years and must include, at a minimum:

a. The tail number of the plane used.

b. The date(s) used.

c. The name(s) of the pilot(s) and flightcrew.

d. The purpose(s) of the flight.

e. The route(s) flown.

f. The names and status of all passengers on all legs of the mission. [195]

4.6.1.5 When mission management flights are used to support Other Official Travel, evidence that the applicable provisions of OMB Circular A-126 have been satisfied is required.

4.6.2 Center Directors shall ensure strict compliance with the following reporting requirements:

4.6.2.1 Monthly submission of mission management flight data to the HQ AMD as required in paragraph 4.5.2.7.

4.6.2.2 Annually reviewing and documenting the Center's continuing need for aircraft whose primary purpose is the transport of passengers and the cost-effectiveness of such aircraft operations, as required by OMB Circular A-126 and reflected in the NASA FMR and guidance from the HQ AMD. Content of this review shall include, in narrative format, a comparison of the past years' use with future requirements. [196] Upon completion of the annual review, a copy shall be forwarded to the HQ AMD not later than October 31 of each year. [197]

4.6.2.3 Establishing variable cost rates for each fiscal year for aircraft under their control that are, or may be, used for passenger transportation. This rate is to be used to determine cost justification for MMA flight requests and shall be reported to the HQ AMD not later than September 15 of each year. [198]

a. The variable rate will be developed per OMB Circular A-126, attachments A and B, using the most recent 12 months of historical cost data available. The Center variable rate must be approved by HQ AMD prior to being applied at the beginning of each FY. If, during the FY, a Center needs to adjust the variable rate, substantiation must be submitted and approved prior to being applied.

4.7 Reimbursement for Nonofficial Travel Use

4.7.1 Reimbursement for nonofficial travel use shall be made in advance of the flight for travel on FAA aircraft, consistent with current FAA procedures. [199]

4.7.2 Reimbursement for nonofficial travel use of NASA-owned or -controlled aircraft shall be made in advance of the flight. [200] Travelers aboard such flights must reimburse the Agency at the full commercial coach fare for the most direct route possible between the origin and destination, except: (a) as authorized under 10 U.S.C. 4744 and regulations implementing the statute and (b) by civilian personnel and their dependents in remote locations (i.e., locations not reasonably accessible to regularly scheduled commercial airline services).

4.7.3 Reimbursement will consist of a noncash payment by personal check made payable to NASA for the amount as determined by the local NASA Travel Office. The check will be submitted to the Customer Payment Processor in the Center's Accounts Receivable office. Receipt of the reimbursement will be fully documented and attached to the Mission Management Flight Request NF 1653. Any flight involving nonofficial travelers shall require notification to the HQ AMD prior to the flight to ensure application of the Agency-wide procedures for reimbursement. [201]

4.8 Operations

4.8.1 NASA mission management flights are public aircraft, as defined by 49 U.S.C. 40102 (37), but are operated as civil aircraft when carrying passengers.

4.8.2 R&D or PS aircraft used to conduct mission management flights shall meet the FAA certification standards required of mission management flights. [202]

4.8.3 Airworthiness of NASA mission management flights shall, at a minimum, meet the standards set forth in the Federal Aviation Regulations for similar business-type aircraft. [203] Aircraft whose primary or secondary purpose is the transport of passengers shall be maintained as required for retention of FAA airworthiness certification. [204]

4.8.4 The cost of operation and the utilization of mission management flights shall be reported in accordance with Financial Management Manual 9353-6 (RCS-10-0000-00271) and OMB Circular A-126. [205]

4.9 Use of Research or Program Support Aircraft for Mission Management Flight Purposes

4.9.1 NASA-owned and -controlled aircraft, including lease and charter, whose primary purpose is to meet mission requirements for research or program support, are public aircraft and are not authorized to carry passengers, even if the classification of the flight is Mission Required, without written approval from the Assistant Administrator for Infrastructure and Administration prior to such use. Approval shall be coordinated with the HQ AMD. [206] Once approval for such use has been obtained, Center Directors may approve Mission Required flights on those specifically authorized aircraft, subject to the reporting procedures of this chapter and the letter of authorization. Absent such specific authorization, personnel aboard aircraft operated as public aircraft is limited to crewmembers or qualified non-crewmembers. The use of a NASA R&D or PS aircraft to provide passenger transportation shall be restricted to circumstances where such use does not conflict with program support or research functions. [207] Strict compliance with this chapter and with OMB Circular A-126 is mandatory. Such use will only be approved subject to the following:

a. When using an R&D or PS aircraft for MMA, the aircraft must be in a valid FAA-certificated configuration.

b. When mission management flights are not readily available or when such use would be impractical, e.g., when using an available mission management flight would create excessive empty flights--deadheading--or would exceed crew duty restrictions.

c. The same cost comparisons required for mission management flights, as required by paragraphs 4.1 through 4.4.

d. When such use has been approved by the Center Director and the Assistant Administrator for Infrastructure and Administration.

4.9.1.1 Centers shall document the justification for and approval of each flight used for mission management purposes and retain the documentation for two years. [208] Additionally, every flight in such aircraft, including flights without passengers, must be accounted for in monthly documentation provided to the HQ AMD as described in section 4.6.2.1 of this chapter.

4.10 Waivers and Supplements

4.10.1 Waivers. When deviations from this NPR are necessary, Center Directors shall submit requests for waivers to the Assistant Administrator for Infrastructure and Administration. [209] Written approval shall be obtained before implementing procedures that are less restrictive than those contained in this NPR. [210]

4.11 Flightcrew Qualifications

4.11.1 Designation. Prior to assigning personnel to flightcrew duties on NASA MMA, the requirements contained in this chapter must be met. The crewmember must be designated, in writing, to the respective crew position, and required training must be completed and documented in the individual's training file.

4.11.2 Training File. A training file shall be maintained for each flightcrew member. [211] This file must contain all documentation pertaining to crew qualification and training. The documents may be retained by the crewmember upon termination of the crewmember's assignment. The file will contain the following minimum documentation:

4.11.2.1 Copies of certificates of professional and medical qualifications, e.g., copies of pilot's, flight engineer's, or mechanic's licenses and a copy of the letter designating the individual to his/her current crew position.

4.11.2.2 A list of ground training accomplishments (including simulator training) indicating dates, location, and amount of training. A record of refresher training must be maintained for the past two calendar years.

4.11.2.3 A list of flight training accomplishments and flight evaluations for the past two calendar years.

4.11.3 Medical Prerequisites. Pilots of MMA shall possess a current FAA First Class Medical Certificate. [212] Flight Maintenance Technicians shall possess a valid FAA Third Class Medical Certificate or NASA medical certificate issued within the past 12 months by a NASA-approved medical examiner. [213] Examinations conducted by non-NASA Aircrew Medical Examiners (AME) will require a records review by a NASA Occupational Health Clinic physician prior to recommendation to the Center Director.

4.11.4 PICs/SICs shall possess an FAA Airline Transport Pilot (ATP) Certificate with appropriate category, class, and type rating in the aircraft assigned. [214] To be designated an aircraft commander, the pilot shall meet the following minimum flight experience requirements:

a. 2,500 pilot hours (500 hours multiengine).

b. 100 pilot hours in type. [215]

4.11.5 Instructor pilots shall be selected by the Center Chief of Flight Operations from highly qualified PICs who have demonstrated the skill, maturity, and temperament to perform instructor duties. [216] Instructor pilots will conduct all pilot flight checks unless the Center designates Flight Examiners for that purpose.

4.11.6 Flight Examiner Pilots/Flight Examiner Maintenance Technicians. Centers may designate highly qualified instructor pilots and flight maintenance technicians as flight examiners to fulfill Center evaluation requirements.

4.11.7 Flight maintenance technicians shall possess an FAA A&P Certificate. [217]

4.12 Crewmember Training

4.12.1 The MMA training program is established to ensure that each crewmember is adequately trained to perform assigned duties safely and proficiently. To the extent practical, procedures training should be standardized for each type of MMA.

4.13 Ground Training

4.13.1 Survival Training. Each primary crewmember shall receive basic survival training on a one-time basis. [218] Additional survival training shall be required by appropriate Center management for those crewmembers engaged in frequent over-water or remote-area flights. [219] Training received prior to NASA employment, such as military survival training courses, may be credited for this requirement. Newly assigned personnel with no previous survival training shall complete this requirement within 12 months of being assigned to flightcrew duties. [220] Pilots shall not be assigned as PIC until this requirement has been met. [221]

4.13.2 Physiological Training. Prior to initial designation, primary crewmembers shall receive instruction in the physiological aspects of high-altitude flight including altitude chamber indoctrination. [222] Altitude chamber training received prior to initial designation meets this requirement. Refresher training academics shall be accomplished every five years. [223] Refresher altitude chamber training is optional for primary crewmembers not conducting pressure suit operations.

4.13.3 Emergency Egress Training. Prior to initial designation and annually thereafter, each crewmember shall receive emergency egress training on each type of aircraft assigned. [224] Training shall include instruction on the location and operation of normal and emergency exits and cabin emergency equipment, such as fire extinguishers and life vests. [225]

4.13.4 Aircraft Initial Training. Each primary crewmember shall complete an approved formal course of instruction in the type aircraft to be flown, including a study of the systems and procedures applicable to the individual's crew position. [226] The term "formal course" is defined as one that is provided by a manufacturer, a commercial activity specializing in pilot training (FAR Part 142 Training Center), or other entity approved by the Center Chief of Flight Operations.

4.13.5 Refresher Training. A formal systems training course is required every six months for pilots and every 18 months for flight maintenance technicians. [227] The course must consist of a minimum of seven hours of academic training. At the discretion of the Center Chief of Flight Operations, a seven-hour local refresher ground training course may be substituted for one of the two annual formal systems training courses for highly experienced pilots who are qualified in multiple aircraft and attend multiple emergency procedure training sessions annually or who are single-aircraft qualified and have at least 3 years and 300 hours experience in the specific aircraft type.

4.13.6 Maintenance Technicians shall attend refresher training that address changes to aircraft systems, test equipment, or critical troubleshooting and repair techniques every 24 months. [228]

4.14 Flight Training Phase

4.14.1 Flight training is designed to provide crewmembers with hands-on experience under controlled conditions. Flight training shall be conducted under the supervision of a NASA-designated flight instructor pilot or an

FAA-certified flight instructor, either in an approved simulator or in an aircraft. [229] Flight training, except that which is associated with transportation procedures, will not be conducted while passengers are on board.

4.14.2 Initial Pilot Training. Prior to initial designation, each pilot shall receive a minimum of ten hours of flight training, eight hours of which may be conducted in a simulator. [230]

4.14.3 Refresher Pilot Training. In each six-month period, pilots shall receive a minimum of six hours of flight or simulator training. [231] At least one-half of this training must be completed in the pilot's (left seat) position. Because of the safety and efficiency provided by modern visual simulators, maximum use should be made of these facilities to meet this training requirement. With the approval of the Center Chief of Flight Operations, one of the semiannual flight or simulator training requirements may be waived for pilots with three years and 300 hours of experience in type and for temporary pilots serving in an SIC capacity. This can be done only after all other applicable requirements of this NPR have been met and the temporary pilot successfully completes a proficiency and instrument proficiency check in type given by a designated NASA flight instructor.

4.14.4 Flight Maintenance Technician Training. Maintenance technicians perform in-flight duties involving passenger safety aboard certain NASA MMA, such as Gulfstream aircraft. Prior to initial designation, each maintenance technician shall receive training in such areas as traffic awareness and "see-and-avoid" techniques, aircraft servicing, weight and balance, and passenger care. [232] This training may be conducted on a regular passenger mission under the supervision of a fully qualified flight maintenance technician or aircraft commander. Initial training will consist of at least two passenger missions. One mission must include an overnight stop away from the home duty station.

4.15 Overdue Training

With the exception of systems and simulator training, which have a two-month grace period, refresher flight training will be considered overdue if not completed by the end of the month in which it is due. Only crewmembers who have completed their required training shall be used as required crewmembers on any passenger missions. [233]

4.16 Minimum Currency Requirements

4.16.1 Minimum Requirements. In the interest of flight safety and to ensure that all crewmembers have the opportunity to exercise their aeronautical skills and thereby maintain the proficiency level for which they have been trained, the following minimum currency requirements shall be met: [234]

4.16.1.1 Pilots. Table 4-2 sets forth the minimum currency requirements for pilots:

Minimum Currency Requirements for All Pilots in the Preceding 90 Days

	All Types	In Type
Flight Hours	25	
Takeoffs and Landings (Total)	6	3
Takeoffs and Landings (Night)	3	1
Approaches	6	3

Notes:
1. Requirements under "All Types" are not limited to MMA.
2. Total "Flight Hours" may include simulator hours.
3. Instrument hours, approaches, takeoffs, and landings (including night takeoffs and landings) may be accomplished in an FAA- or military-approved (Level C/D) simulator. Approaches must include both precision and nonprecision types.

Table 4-2 Minimum Currency Requirements for Pilots

a. Pilots Qualified in Program Support/MMA Aircraft. Pilots with current qualifications in a Program Support aircraft that is also FAA-certified for MMA use, but infrequently used for that purpose, may perform the duties of PIC and SIC on that aircraft if they meet the currency requirements stated herein. At Centers that operate multiple higher performance aircraft than the MMA and where such aircraft have annual or semiannual simulator and other similar requirements (night landings, approaches, and hours), pilots will be considered to have met the recent experience

requirements of paragraph 4.16.1.1.

b. Total pilot/copilot hours may include simulator hours.

c. Instrument hours, approaches, and landings (including night landings) may be accomplished in an approved visual, motion simulator. Approaches should be evenly balanced between precision and nonprecision.

4.16.2 Flight Maintenance Technicians. To maintain currency, flight maintenance technicians shall have flown at least three passenger missions each calendar quarter, or they must be accompanied by a current flight maintenance technician. [235]

4.17 Overdue Recent Experience

The following apply to pilots overdue for the recent experience provisions of table 4-2:

4.17.1 Increased Minimums. A pilot at the controls who does not meet the 90-day total hour requirements, but is otherwise current, shall increase all instrument approach minimums by 200 feet and 1/2-mile visibility (or the Runway Visual Range equivalent). [236] In no case may the resulting minimums be less than a 400-foot ceiling and 1-mile visibility.

4.17.2 Step-down Qualifications. PICs who are otherwise current but fail to meet the requirements outlined in table 4-2 may revert to SIC status if they are current in their respective positions until the recent-experience provisions for aircraft commander are satisfied.

4.17.3 Multiple Currency. At the discretion of the Chief Pilot, pilots flying multiple types of aircraft who have met the "all types" requirements may satisfy the "in type" currency requirement by flying a training flight with a flight instructor. This training flight shall include a minimum of two instrument approaches, three takeoffs, and three landings. [237]

4.17.4 Night Landing Currency. Pilots not meeting the night-landing currency requirements of table 4-2 cannot conduct night landings with passengers on board, but may be otherwise utilized until the night-landing requirements are satisfied. Night-landing requirements may be accomplished in an approved visual simulator.

4.17.5 Lapse in Qualification. Crewmembers overdue in any recent-experience requirement, except as modified above, are disqualified for assignment as PIC or SIC on passenger flights. Lapse in qualification of up to 90 days requires requalification in items that are deficient or requires a proficiency flight check with an instructor pilot. Lapse in qualification greater than 90 days requires retraining of at least six hours dedicated flight or simulator training as determined by the Center Chief of Flight Operations and requires a formal flight evaluation by an instructor pilot. [238]

4.18 Evaluation Phase

4.18.1 Evaluations. The intent of the NASA flightcrew evaluation program is to objectively evaluate aircrew performance and, thereby, measure the effectiveness of the training program. Designated instructor pilots (IPs) shall administer all flight checks. [239] An IP shall be designated for all flights in which instruction or evaluation is planned. [240]

4.18.2 Annual Proficiency Check. Prior to being designated in their crew position, and annually thereafter, pilots shall complete a proficiency evaluation flight conducted by a NASA-designated IP or an FAA-designated flight IP. [241] When maintaining qualifications in more than one type of aircraft, an annual proficiency evaluation flight in each aircraft is required. Except for the initial check, proficiency checks may be accomplished in an approved simulator by a NASA IP or an FAA-designated examiner. Flight checks are considered overdue if not completed by the end of the month in which they are due. Pilots with overdue proficiency checks shall be scheduled only on training flights (i.e., non-passenger flights) with an instructor pilot. [242]

4.18.3 Line Checks. Prior to being designated an aircraft commander and annually thereafter, pilots shall complete a line evaluation flight conducted by an IP. [243] When maintaining qualification in more than one type MMA, a line evaluation in each aircraft is required annually. The annual line check requirement may be conducted on typical passenger missions or in a Line Oriented Flight Training (LOFT) program in an approved simulator. Pilots with overdue line checks shall not be scheduled as a PIC until a check is completed. [244]

4.18.4 Documentation. Flight checks conducted by NASA IPs shall be recorded on NASA Form 1615 or Center equivalent, reviewed by the Center Chief of Flight Operations, and filed in the individual's training file. [245] All items indicated on the Form 1615 or Center equivalent will be evaluated during the flight checks. Flight instructors are urged to include meaningful remarks and recommendations on the check ride form. This will aid in focusing future training.

4.19 Coordination and Scheduling

4.19.1 In addition to approving the use of MMA, the Assistant Administrator for the Office of Infrastructure and Administration and the Center Directors shall:

a. Ensure that the most cost-effective MMA is used to satisfy approved requirements. Exceptions to this usage shall be documented in writing. [246]

b. Coordinate trip itineraries and requirements with other NASA activities that could benefit from the use of available seats on each trip. [247]

4.20 Crew Complement

4.20.1 General. All personnel scheduled as primary flight crewmembers on NASA MMA passenger flights shall be trained and qualified in accordance with paragraphs 5.9 through 5.15 of this NPR. [248] Crew assignment, including identification of PIC, shall be designated in writing for each flight. [249]

4.20.2 Basic Crew. No aircraft carrying passengers shall be operated with less than the minimum basic crew specified below. [250] Exception: G-II/III aircraft may be operated with three pilots, one of whom functions as the Flight Maintenance Technician, or the flight may be operated without a flight maintenance technician at the direction of the Center Chief of Flight Operations.

a. Gulfstream II/III - PIC, SIC. Flight Maintenance Technician (optional)

b. King Air B200 - PIC and SIC

4.21 Crew Duty Time

4.21.1 Crew duty time is the total time a crew is on duty before the final termination of a flight. Crew duty time accrues consecutively and begins when a crew reports to a designated place of duty to start preparation for a flight and ends when the engines are cut at the end of the flight or series of flights. Using personnel as crewmembers who commenced other duties before reporting for a flight is not precluded; however, in this case, the crew duty time for the entire crew begins when those other duties commenced.

4.21.2 Duty Time Limitations. Basic crew duty time shall not be scheduled to exceed 14 consecutive hours except as set forth below. [251]

4.21.2.1 The Center Chief of Flight Operations may, for a particular flight, extend the basic crew duty time to 16 hours if the total time of crew duty is confined to the period between 4 a.m. and midnight (local time at departure point). The aircraft must be pressurized and have a functional autopilot.

4.21.2.2 Augmented crews will be used only as a last resort when all other options, such as rescheduling or pre-positioning other crews, are not possible. Consideration must be given to limiting passenger load to ensure that an adequate crew rest capability is available. Augmented crew duty time shall not be scheduled to exceed 18 consecutive hours. [252] The aircraft must be pressurized and have a functional autopilot. Flights requiring augmentation shall be approved by the Center Chief of Flight Operations and documented and maintained on file for a period of 12 months. [253]

4.21.2.3 Relief crews shall be pre-positioned if the mission schedule cannot be supported within the duty time limitations specified for a single or augmented crew. [254]

4.22 Crew Rest

4.22.1 Crew Rest Definition. Crew rest includes crew transportation prior to participating in flightcrew duties and will be provided prior to departure from the home station as well as at en route stops when mission schedule or crew duty limitations prevent the aircraft from returning to the home station.

4.22.2 Crew Rest Limitations

4.22.2.1 Crew rest shall normally provide at least 10 consecutive hours free of all official duties. [255]

4.22.2.2 At en route stops, crew rest shall not commence until one hour after termination of the mission in order to allow for necessary post-flight duties. [256]

4.22.2.3 The crew rest period shall end one hour prior to the crew beginning official duties in preparation for departure, normally at least one hour prior to scheduled takeoff time. [257]

4.22.2.4 The Center Chief of Flight Operations may approve a reduced crew rest of no less than 8 hours total ground time, provided this time is confined to between the hours of 8 p.m. and 8 a.m. local time. Approvals for reduced crew rest shall be limited to one occurrence per crewmember during any seven-day period. [258] Such approvals shall be documented and maintained on file for a period of 12 months. [259]

4.22.2.5 Time accrued by any flightcrew member traveling as a passenger on an aircraft may not be credited to meet any of the crew rest requirements of this chapter.

4.23 Maximum Flight Time Limitations

4.23.1 Flightcrew members shall not be scheduled, nor permitted, to function as members of MMA flightcrews, if their total professional flying time exceeds the following flight hours in table 4-3: [260]

Period	Flight Hours
7 consecutive days	35 hours
30 consecutive days	100 hours
90 consecutive days	300 hours
365 consecutive day	1,000 hours

Table 4-3 Maximum Flight Time Limitations

4.24 Hazardous Cargo

Hazardous material as defined in 49 C.F.R. 171.8 shall not be transported aboard NASA MMA. [261] Cargo to be shipped shall be routed through the Center's transportation office before acceptance or, if en route, cargo normally only shall be accepted from a certified shipper or freight forwarding agency. [262] Unaccompanied baggage will be treated as cargo.

4.25 Sterile Cockpit Procedures

During all critical flight operations, cockpit activities and conversation shall be limited to those involved with the direct operation of the aircraft. [263] This "Sterile Cockpit" environment must be maintained when below 10,000 feet above ground level (AGL) during approach and departure, except during prolonged cruise at an altitude below 10,000 feet AGL.

4.26 Crew Briefings

Before departure, the PIC shall brief the crew on all essential information concerning the flight including weather, restrictions, and the duties and responsibilities of each flightcrew member. [264]

4.27 Flight Planning Considerations

4.27.1 Passenger Loading. Normally, all engines and propellers will be completely stopped when loading and unloading passengers or cargo from MMA. In those instances when, in the determination of the PIC, an extenuating circumstance requires loading or unloading passengers or cargo with an engine running, the following minimum precautions will be followed:

a. Only the engine on the opposite side of the aircraft from the loading door shall be operating and shall be operated at as low a power setting as practical.

b. A flightcrew member shall be positioned on the ground to ensure that passengers do not approach close to an operating engine or windmilling propeller. [265]

4.27.2 Passenger Briefings. The PIC shall ensure that all passengers have been briefed on the Disclosure for Persons Flying Aboard Federal Government Aircraft (see appendix B-2). [266] In addition, the briefing will include the no smoking policy, use of seat belts, location and operation of emergency and survival equipment, operation of doors and exits, and any other Federally required information. This information will be supplemented by printed passenger information cards. Prerecorded passenger briefings may be used, provided the sound reproduction is of high quality and provided a crewmember is present in the cabin during the briefing to answer passenger questions.

4.27.3 Flight Planning. Thorough flight planning is essential to the safe and efficient conduct of MMA passenger flights. A flight plan shall be filed for each flight. [267] Passenger flights shall be operated under instrument flight rules and, to the maximum extent possible, in controlled airspace; however, daylight flights of less than 100 nautical miles may be operated under visual flight rules if weather conditions permit. [268] These flights should utilize radar advisory service to the maximum extent possible.

4.27.4 Fuel Planning. Considering weather forecasts and any known en route delays, the minimum amount of useable fuel required at takeoff shall be sufficient to do the following:

a. Complete the flight to the destination airport.

b. Fly from that airport to the alternate airport, if required.

c. Fly after that for one additional hour using cruise fuel consumption at 10,000 feet mean sea level (MSL). [269]

4.27.5 Weather Planning. Prior to takeoff, the PIC shall receive a thorough weather briefing concerning current weather and forecasts for the proposed route, destination, and alternate destination. [270]

4.27.5.1 Departure Weather. Weather minimums for takeoff shall be not less than landing minimums unless a takeoff alternate is available. [271] A takeoff may be made when the weather is below landing minimums but not less than 1/8-mile visibility or Runway Visual Range (RVR) of 800 feet and provided a suitable departure alternate is available within 30 minutes flight time with an engine inoperative. The weather reported at the departure alternate must be above landing minimums and forecast to remain so for at least two hours after takeoff per the following:

a. Precision Approach available: 200-foot ceiling and 1/2-statute mile (SM) visibility added to the published Precision Approach minimums.

b. Non-Precision Approach (only) available: 300-foot ceiling and 1-SM visibility added to the published Non-Precision Approach minimums.

4.27.5.2 En Route Weather. The PIC of an MMA flight will not file a flight plan requesting clearance into areas of reported or forecast severe icing conditions. Operative airborne radar is required for any flight into areas where current weather reports or forecasts indicate that thunderstorms may reasonably be expected and flight under daylight visual meteorological conditions is not possible. All flights shall be planned to circumnavigate areas of thunderstorm activity. [272]

4.27.5.3 Destination Weather. The PIC of an MMA flight may file for a destination that forecasts prevailing visibility equal to or greater than published landing minimums appropriate to the aircraft equipment, but not less than 1/2 mile or RVR 1,800 feet for time of arrival. If the destination weather is reported and forecast to be less than a 2,000-foot ceiling or less than three-mile visibility from one hour before until one hour after the estimated time of arrival (ETA), an alternate airport must be listed on the flight plan. Airport weather minimums shall meet or exceed the requirements of FAR part 91. [273]

4.27.5.4 New PIC. When the pilot has less than 100 hours PIC experience in the type (make and model) aircraft being operated, the minimum descent altitude (MDA) or the Decision Altitude (DA) and visibility landing minimums shall be increased by 200 feet and 1/2 mile (or the RVR equivalent) for all instrument approaches conducted by that pilot. [274] In no case shall the landing minimums be less than a 400-foot ceiling and one-mile visibility. [275] Similarly, takeoffs shall not be made if the airfield is below these adjusted landing minimums. [276]

4.27.6 Aircraft Logs. Prior to activating any aircraft system, aircraft maintenance forms shall be reviewed and evaluated. [277] Prior to flight, the PIC shall accept the aircraft by signing the form. DoD aircraft forms, Naval Aviation Logistics Command Management Information System (NALCOMIS), or equivalent forms may be used as a substitute for specific NASA forms. [278]

4.27.7 Weight and Balance Data. A copy of the current weight and balance data shall be carried aboard each MMA. [279] It is used to determine that the weight and center of gravity remain within limits for the duration of each flight.

4.28 Takeoff and Departure Procedures

4.28.1 Departure. On departure, navigational aids (NAVAIDS) shall be set up to aid in a possible expedited emergency return, as well as to aid in establishing the initial en route course. [280]

4.28.2 Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR). If installed and operative, the CVR and FDR shall be turned on during the entire flight. [281] Should an incident occur, the CVR and FDR power shall be removed and appropriate circuit breakers pulled following completion of the after-shutdown checklist. [282]

4.28.3 Enhanced Ground Proximity Warning System (EGPWS)/Terrain Awareness and Warning System (TAWS). EGPWS/TAWS shall be used on all flights. [283] If the equipment tests satisfactorily prior to takeoff, it must be assumed that any EGPWS/TAWS warning is valid unless the aircraft position can immediately and positively be verified by visual reference. Immediate and appropriate action shall be taken in response to all valid EGPWS/TAWS warning calls. [284]

4.28.4 Landing Lights. Landing lights shall be used during all takeoffs and landings and when operating near airports or in high-density traffic areas. [285]

4.28.5 Outside Vigilance. The PIC is responsible for ensuring that, during visual conditions, at least one person maintains a lookout for conflicting traffic at all times. Unnecessary paperwork will not be accomplished in the cockpit during aircraft climbs or descents.

4.28.6 Outside Observers. Use of any additional crewmembers to aid in outside vigilance is highly encouraged, particularly while operating in visual conditions in heavy traffic areas. Flight Maintenance Technicians shall remain at their duty station throughout the climb and descent. [286] Their cabin duties are considered secondary in importance during these times.

4.28.7 Traffic Alert and Collision Avoidance System (TCAS/TCAD) resolution advisories (RA) shall be followed. [287]

4.29 En Route Procedures

4.29.1 Passenger Considerations. The PIC is responsible for the safety and comfort of the passengers and must make every reasonable effort to keep the senior passenger or trip coordinator apprised of any significant deviations from the itinerary or schedule. In-flight delays and readily discernible abnormal conditions shall be explained to the passengers. [288]

4.29.1.1 Safety Belts. The PIC shall require that all passengers and crewmembers have safety belts securely fastened for taxiing, takeoffs, landings, and before entering an area of in-flight turbulence. [289]

4.29.1.2 Admission to the Flight Deck. Passengers shall not be admitted to the flight deck during "sterile cockpit" phases of flight. [290]

4.29.2 Minimum Fuel. The PIC shall notify ATC of the aircraft "minimum fuel" status at any time the fuel supply has reached a quantity where, upon reaching destination, little or no delay can be accepted. In no case may this quantity be less than that specified in table 4-6. [292] If fuel remaining indicates a need for traffic priority to ensure a safe landing, the PIC shall formally declare an emergency due to low fuel and shall report fuel remaining in minutes. [292]

4.29.3 Emergency Procedures. When an emergency or in-flight difficulty arises, the crew shall complete the checklists and report the nature and extent of the difficulty, intentions, and assistance required to the controlling ground agency. [293] In the event of an engine failure or shutdown, the aircraft shall land at the nearest suitable airport at which a safe landing can be made. [294]

4.30 Arrival, Approach, and Landing Procedures

4.30.1 General. During instrument arrivals, all available navigational aids shall be used. When available, precision approach guidance (Instrument Landing System or Precision Approach Radar) will be used for all night arrivals except for specific events during training flights. [295]

4.30.2 Weather Minimums. Pilots operating aircraft shall land the aircraft only when the flight visibility is equal to or greater than the visibility prescribed in the standard instrument approach procedure being used. [296]

4.30.3 Destination Below Minimums. If the destination weather is marginal or below minimums, the PIC may proceed to a suitable alternate or may hold if the destination weather is forecast to improve and fuel for alternate and reserve requirements will not be compromised. The weather at the alternate must be at or above alternate minimums and forecast to remain so until the new ETA plus one hour.

4.30.4 Approach Briefing. Before starting an approach, the pilot flying shall brief the crew on the procedures to be followed during the approach and landing and in the event of a missed approach. The briefing will include a review of the procedure to be flown, including key altitudes and restrictions, as well as specific crew duties during the approach and landing. [297]

4.30.5 Approach Progress. The following procedures will be followed during approach:

a. The pilot flying the approach shall announce his/her progress and intentions periodically. [298]

b. The pilot monitoring shall observe the approach and provide a continual cross-check of the navigational aids, instruments, air traffic control instructions, and approach procedures. [299]

c. Any deviations from the prescribed procedure shall immediately be brought to the attention of the pilot flying. [300]

d. The pilot monitoring shall call out "1,000 feet above" and "100 feet above" all key altitudes, as well as "minimums" upon reaching the Missed Approach position. [301]

e. When the runway is in sight, the pilot monitoring shall state, "runway in sight." [302]

f. If the runway is not in sight when the aircraft reaches the Missed Approach point, the pilot monitoring shall state, "go around." [303]

4.30.6 Use of Autopilot. Use of the autopilot during arrivals, descents, and approaches is encouraged, particularly during visual flight conditions, as an aid in collision avoidance. To prevent excessive loss of altitude in the event of an autopilot failure, the pilot directing the aircraft shall maintain flight control contact throughout the final portion of an automatic coupler approach. Full manual control shall be assumed at or above published minimum altitude. [304]

4.30.7 Canceling Instrument Flight Plans. Normally, instrument flight plans will not be canceled prior to landing.

4.31 Post-flight Procedures

4.31.1 Closing Flight Plan. On completion of the flight, the PIC shall ensure the flight plan is closed with the appropriate facility. [305]

4.31.2 Aircraft Security. The PIC shall take prudent measures to secure and protect the aircraft at en route stops. [306] These measures should prevent unnecessary exposure to inclement weather, such as high winds and freezing precipitation, and also provide a reasonable degree of security from such activities as vandalism, theft, or terrorism. State Department Advisories and the DoD Foreign Clearance Guide (FCG) shall be consulted for out-of-continental United States (CONUS) operations. [307]

4.31.3 Aircraft Flight Logs. The flightcrew shall enter in the aircraft flight log each mechanical irregularity discovered during the flight. All unusual events (e.g., overweight or hard landings, lightning or bird strike, static discharge, or flight through hail or severe turbulence) will be recorded in the aircraft log. [308]

4.32 Specific Operational Restrictions

4.32.1 Use of Flight Manual Data. Aircraft flight manual data shall be used to ensure adequate takeoff, climb, approach, and landing performance is available for the actual conditions encountered. [309] Additional restrictions, as outlined in the tables below, are established to ensure a prudent level of safety during routine line operations.

4.32.2 Minimum Runway Lengths. Table 4-4 contains the minimum runway lengths to be used for the aircraft. Headquarters waiver is required for takeoffs from or landings on runways of lesser length runways. [310]

Aircraft	Runway
King Air B200	3,500 ft
Gulfstream II/III	6,000 ft

Table 4-4 Minimum Runway Length for MMA Operations

4.32.3 Wind Restrictions. For normal operations, airfields shall be considered below minimums for takeoff and landing when winds, including gusts, are greater than those established below: [311]

Aircraft	Maximum Component	Tailwind Component	Crosswind
King Air B200	45 kts	10 kts	25 kts
Gulfstream II/III	40 kts	10 kts	20 kts

Table 4-5 Wind Restrictions

4.32.4 Minimum Fuel for Landing. Minimum fuel for landing is established in recognition of three factors: (1) Fuel required to execute an unanticipated go-around and traffic pattern; (2) fuel required for landing and rollout; and (3) allowance for fuel quantity measuring system error. All flights shall be planned to have no less than the following minimum indicated fuel available at touchdown on the final landing: [312]

Aircraft	Minimum Landing Fuel
King Air B200	400 pounds
Gulfstream II/III	3,000 pounds

Table 4-6 Minimum Landing Fuel

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